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CLIPPINGS

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Hardening Off Indoor Seedlings

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Until recently, I had not realized how valuable the process of hardening off plants truly is. The use of hardy vegetable transplants is very important for success, especially for beginning gardeners. Generally, good quality transplants can be selected by their stocky, healthy appearance, medium size (not too leggy), deep green color and freedom from disease and insects.



What is hardening off and why is it important? As the name suggests, hardening off is a process by which transplants are toughened up so they can withstand nature's stresses as they grow. It gives your plants a better chance to survive the transition phase between the sheltered indoor environment and the garden's less predictable conditions. Through this process, vegetable plants can develop hardiness, allowing them to withstand wind, sun, subfreezing temperatures, and fluctuations in moisture. If not hardened off, plants may struggle and fall victim to environmental damage and pests.

Hardening off reduces the growth rate, thickens the cuticle and waxy layers, and reduces the amount of freeze-prone water in the plant. Such plants often have smaller and darker green leaves than non-hardened plants. Hardening results in an increased level of carbohydrates in the plant and triggers more rapid root development than in non-hardened plants.

Why do my transplants appear to be dying? Transplanting from indoors to outdoors can cause a plant to go into shock. Low but above freezing temperatures affect the water status of sensitive plants, such as tomatoes, peppers, cucumbers, squash and beans. Because of poor control of water loss by the leaves and reduced water uptake by the roots, chilled plants show symptoms of dehydration. Chilling injury can be prevented using hardening treatments like water deprivation, low temperature conditioning, and mechanically-induced stress, or by using chemical protectants. These treatments can be used individually or in combination.

What are conventional methods for hardening off plants? The conventional method of hardening off recommends that plants be progressively introduced to the outside world by placing them in a somewhat protected and shaded location for a few hours each day during the 10 to 14 days before transplanting. This method slows their growth and toughens them up in order to maintain the level of shock a plant will experience. Transplants are more likely to recuperate quickly if they are smaller when transplanting occurs rather than larger.

A few days before you start to take the transplants outdoors, water them lightly at less frequent intervals. Tomatoes, for example, should be allowed to droop, but should not be allowed to turn brown or crispy. Do not fertilize immediately before or during the hardening process. However, a weak fertilizer can be used to get transplants growing again and to minimize shock once they are transplanted.

Start by placing the plants outdoors in a protected location for a few hours per day. During the next 7 to 10 days, gradually increase the amount of time they spend outside and extend their exposure to wind and sun. This forces the development of a thicker cuticle layer, thereby reducing water loss. After several 10 to 12 hour days of exposure to outdoor weather conditions, leave them outside 24 hours a day for a couple of days. They will then be ready to transplant to the garden.



Is there an alternative to hardening off plants? To avoid hardening off altogether, plant the tender transplants directly in your garden with some form of protection. Some gardeners use juice cans, bottomless plastic milk jugs or buckets. Impatient gardeners like myself tend to resort to this option and many experienced gardeners do, too. The potential advantage of not hardening off is 7 to 10 days growth gain for the transplants; however, this is done at the risk of the plant's life. Some plants can be easy victims of the garden's harsh environment.

Whether you choose to harden off or avoid it, taking the extra steps to ensure healthy plants will prove worth your time once harvest season arrives.

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